UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND - REGION I
ONE CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

FACT SHEET

DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES

NPDES PERMIT NO.: **MA0101516**

NAME AND ADDRESS OF APPLICANT:

Town of Erving
Village of Millers Falls
Board of Selectmen
Erving, MA 01344

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Erving WWTF #1
16 Public Works Boulevard
Village of Millers Falls
Erving, MA 01344

RECEIVING WATER: **Millers River (MA35-05)**

CLASSIFICATION: **B (warm water fishery)**

I. PROPOSED ACTION

The above named applicant has applied to the U.S. Environmental Protection Agency for the re-issuance of its National Pollutant Discharge Elimination System (NPDES) permit to discharge into the designated receiving water. The current permit was signed on May 11, 2004 and became effective on May 11, 2004. The permit expired September 30, 2007. A re-application was received March 30, 2007. This draft permit, after it becomes effective, will expire five (5) years from the effective date of issuance.

TYPE OF FACILITY AND DISCHARGE LOCATION

The Erving WWTF #1 is a secondary wastewater treatment facility with a design flow of 1.02 million gallons per day (MGD) located in the village of Millers Falls, in the town of Erving, MA. The facility provides treatment of domestic sanitary wastewater and serves a population of 1,500; approximately 750 from the town of Erving, primarily within the village of Millers Falls, and 750 from the town of Millers Falls. The facility is currently receiving an average of 173,000 GPD of sanitary wastewater and approximately 400,000 gallons per year of septage. Since 2000, this facility has not been receiving wastewater flow from the International Paper mill which is currently not operating. Due to the significantly reduced influent flow, the current treatment scheme bypasses the primary clarifiers and is conveyed directly to one of the two aeration tanks. The effluent from the aeration tank goes to one of two final clarifiers and then to one of two chlorine contact tanks. The final treated effluent is conveyed and discharged via outfall 001 to the Millers River (see Figure 2 for flow schematic). Waste thickened sludge is trucked off-site for treatment and disposal under contract - usually one truckload per month.

The sewerage collection system is not a combined system and does not collect storm water drainage. Infiltration and inflow flows entering the sewer system during wet weather periods are reported to be minimal after recently completed sewer rehabilitation work.

The Erving WWTF #1 treatment facilities and other relevant components, including residual waste streams, are outlined below (see figure 2):

Treatment Plant Facilities (Design Flow = 1.02 million MGD):

- headworks with grit chamber
- two primary clarifiers
- two aeration tanks
- two secondary clarifiers
- gravity thickener tank for thickening waste activated sludge and septage
- two chlorine contact tanks for seasonal disinfection by chlorine gas
- dechlorination when chlorinating (sodium bisulphite added)
- discharge of final effluent by Outfall 001 to the Millers River
- dedicated emergency electricity generator on-site capable of maintaining operation of the facility

Sludge Handling/Disposal:

- gravity thickener tank sludge is pumped to truck for final disposal off-site
- decanted liquid from gravity thickener is conveyed to headworks

Septage:

- 9,000 gallon septage storage tank for septage receiving
- septage periodically pumped to gravity thickener
- co-settled with waste activated sludge and trucked off-site, liquid portion conveyed to aeration tank

Chemicals used in the treatment process:

- polymer is added to gravity thickener tank to aid thickening/settling
- chlorine gas is used seasonally for disinfection
- sodium bisulphite is used seasonally for de-chlorination prior to discharge

The permittee is currently planning to replace the current headworks with fine screen and vortex grit removal. Plans include changing the mechanical aeration to a fine bubble system. Chlorination is to be replaced with ultraviolet disinfection.

III DESCRIPTION OF DISCHARGE

The Erving WWTF #1 discharge is via outfall 001 to the Millers River, within the Millers River Basin; approximately 0.5 miles upstream from the Millers River's confluence with the Connecticut River (see Figure 1). Quantitative descriptions of the discharge in terms of significant effluent parameters based on recent discharge monitoring reports (DMRs) for February 1, 2006 through January 31, 2008 may be found in Fact Sheet Attachment A.

IV. LIMITATIONS AND CONDITIONS

The effluent limitations and monitoring requirements may be found in the draft NPDES permit.

V. PERMIT BASIS AND EXPLANATION OF EFFLUENT LIMITATION DERIVATION

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. General Regulatory Background

Congress enacted the Clean Water Act (CWA), "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." CWA §101(a). To achieve this objective, the CWA makes it unlawful for any person to discharge any pollutant into the waters of the United States from any point source, except as authorized by specified permitting sections of the CWA, one of which is Section 402. See CWA §§ 301(a), 402(a). Section 402(a) establishes one of the CWA's principal permitting programs, the National Pollutant Discharge Elimination System (NPDES).

Under this section of the CWA, EPA may "issue a permit for the discharge of any pollutant, or combination of pollutants" in accordance with certain conditions. See CWA § 402(a). NPDES permits generally contain discharge limitations and establish related monitoring and reporting requirements. See CWA § 402(a)(1)-(2).

Section 301 of the CWA provides for two types of effluent limitations to be included in NPDES permits: "technology-based" limitations and "water quality-based" limitations. See CWA §§ 301, 304(b); 40 C.F.R. 122, 125, 131. Technology-based limitations, generally developed on an industry-by-industry basis, reflect a specified level of pollutant reducing technology available and economically achievable for the type of facility being permitted. See CWA § 301(b). As a class, POTW's must meet performance-based requirements based on available wastewater treatment technology. CWA § 301(b)(1)(B). The performance level for POTWs is referred to as "secondary treatment". Secondary treatment is comprised of technology-based requirements expressed in terms of BOD_5, TSS, and pH. 40 C.F.R. Part 133.

Water quality-based effluent limits are designed to ensure that State water quality standards are met regardless of the decision made with respect to technology and economics in establishing technology-based limitations. In particular, Section 301(b)(1)(C) requires achievement of, "any more stringent limitation, including those necessary to meet water quality standards...established pursuant to any State law or regulation…" See 40 C.F.R. §§ 122.4(d), 122.44(d)(1) (providing that a permit must contain effluent limits as necessary to protect State water quality standards, "including State narrative criteria for water quality") (emphasis added) and 122.44(d)(5) (providing in part that a permit incorporate any more stringent limits required by Section 301(b)(1)(C) of the CWA).

The CWA requires that States develop water quality standards for all water bodies within the State. CWA § 303. These standards have three parts: (1) one or more "designated uses" for each water body or water body segment in the state; (2) water quality "criteria", consisting of numeric concentration levels and/or narrative statements specifying the amounts of various pollutants that may be present in each water body without impairing the designated uses of that water body; and (3) an antidegradation provision, focused on protecting high quality waters and protecting and maintaining water quality necessary to protect existing uses. CWA § 303(c)(2)(A), 40 C.F.R. § 131.12. The limits and conditions of the permit reflect the goal of the CWA and EPA to achieve and then to maintain water quality standards.

Receiving stream requirements are established according to numeric and narrative standards adopted under State law for each stream classification. When using chemical-specific numeric criteria from the State's water quality standards to develop permit limits, both the acute and chronic aquatic life criteria are used and expressed in terms of maximum allowable in stream pollutant concentrations. Acute aquatic life criteria are generally implemented through average monthly limits.

Where a State has not established a numeric water quality criterion for a specific chemical pollutant that is present in the effluent in a concentration that causes or has a reasonable potential to cause a violation of narrative water quality standards, the permitting authority must establish effluent limits in one of three ways: based on a "calculated numeric criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and fully protect the designated use"; on a "case-by-case basis" using CWA Section 304(a) recommended water quality criteria, supplemented as necessary by other relevant information; or, in certain circumstances, based on an indicator parameter. 40 C.F.R. § 122.44(d)(1)(vi)(A-C).

All statutory deadlines for meeting various treatment technology-based effluent limitations established pursuant to the CWA have expired. When technology-based effluent limits are included in a permit, compliance with those limitations is from the date the issued permit becomes effective. See 40 C.F.R. § 125.3(a)(1). Compliance schedules and deadlines not in accordance with the statutory provisions of the CWA cannot be authorized by an NPDES permit. The regulations governing EPA's NPDES permit program are generally found in 40 C.F.R. Parts 122, 124, 125, and 136.

The permit must limit any pollutant parameter (conventional, non-conventional, toxic, and whole effluent toxicity) that is or may be discharged at a level that causes or has "reasonable potential" to cause or contribute to an excursion above any water-quality criterion, see 40 C.F.R. §122.44(d)(1)(i). An excursion occurs if the projected or actual in-stream concentration exceeds the applicable criterion.

Reasonable Potential

In determining reasonable potential, EPA considers: 1) existing controls on point and non-point sources of pollution; 2) pollutant concentration and variability in the effluent and receiving water as determined from the permit's reissuance application, DMRs, and State and Federal Water Quality Reports; 3) sensitivity of the species to toxicity testing; 4) the statistical approach outlined in *Technical Support Document for Water Quality-Based Toxics Control*, March 1991, EPA/502/2-90-001 in Section 3; and, where appropriate, 5) dilution of the effluent in the receiving water.

Anti-Backsliding

Section 402(o) of the CWA generally provides that the effluent limitations of a renewed, reissued, or modified permit must be at least as stringent as the comparable effluent limitations in the previous permit. EPA has also promulgated anti-backsliding regulations which are found at 40 C.F.R. § 122.44(l). Unless applicable anti-backsliding requirements are met, the limits and conditions in the reissued permit must be at least as stringent as those in the previous permit.

State Certification

Section 401(a)(1) of the CWA requires all NPDES permit applicants to obtain a certification from the appropriate state agency stating that the permit will comply with all applicable federal effluent limitations and State water quality standards. See CWA § 4012(a)(1). The regulatory provisions pertaining to State certification provide that EPA may not issue a permit until a certification is granted or waived by the state in which the discharge originates. 40 C.F.R. § 124.53(a). The regulations further provide that, "when certification is required…no final permit shall be issued…unless the final permit incorporates the requirements specified in the certification under § 124.53(e)." 40 C.F.R. § 124.55(a)(2). Section 124.53(e) in turn provides that the State certification shall include "any conditions more stringent than those in the draft permit which the State finds necessary" to assure compliance with, among other things, State water quality standards, see 40 C.F.R. § 124.53(e)(2), and shall also include "[a] statement of the extent to which each conditions of the draft permit can be made less stringent without violating the requirements of State law, including water quality standards", see 40 C.F.R. § 124.53(e)(3).

However, when EPA reasonably believes that a State water quality standard requires a more stringent permit limitation than that reflected in a state certification, it has an independent duty under CWA § 301(b)(1)(C) to include more stringent permit limitations. See 40 C.F.R. §§ 122.44(d)(1) and (5). It should be noted that under CWA § 401, EPA's duty to defer to considerations of state law is intended to prevent EPA from relaxing any requirements, limitations, or conditions imposed by State law. Therefore, "[a] State may not condition or deny a certification on the grounds that State law allows a less stringent permit condition." 40 C.F.R. § 124.55(c). In such an instance, the regulation provides that, "The Regional Administrator shall disregard any such certification conditions or denials as waivers of certification." Id. EPA regulations pertaining to permit limits based upon water quality standards and state requirements are contained in 40 C.F.R. § 122.4(d) and 40 C.F.R. § 122.44(d).

In accordance with regulations found at 40 CFR Section 131.12, MassDEP has developed and adopted a statewide antidegradation policy to maintain and protect existing in-stream water quality. The Massachusetts Antidegradation Policy is found at Title 314 CMR 4.04. No lowering of water quality is allowed, except in accordance with the antidegradation policy. All existing uses of the Millers River must be protected. This draft permit is being reissued with allowable discharge limits as, or more, stringent than those in the current permit and with the same parameter coverage. There is no change in outfall location. The public is invited to participate in the antidegradation finding through the permit public notice procedure.

Under Section 301(b)(1) of the Clean Water Act ("CWA"), publicly owned treatment works ("POTWs") must have achieved effluent limitations based upon Secondary Treatment by July 1, 1977.

The secondary treatment requirements are set forth at 40 C.F.R. Part 133.102. In addition, Section 301(b)(1)(C) of the CWA requires that effluent limitations based on water quality considerations be established for point source discharges when such limitations are necessary to meet state or federal water quality standards that are applicable to the designated receiving water.

2. Water Quality Standards and Designated Uses

The Erving WWTF #1 discharge to the Millers River is located approximately 0.5 miles upstream of the Millers River confluence with the Connecticut River in river segment MA 35-05. MA 35-05 is a 9.2 mile segment of the Millers River from the Erving POTW in Erving Center and ending with the Miller's confluence with the Connecticut River. This segment is comparatively steeper in slope than the upper river segments, and has increased flow velocity including twelve sets of rapids. The river slows before entering the Connecticut River at Route 2 in Erving.

This Millers River segment has been designated as Class B water, warm water fishery. The Massachusetts Surface Water Quality Standards, 314 Code of Massachusetts Regulations ("CMR") 4.05(3) (b) states that Class B waters are designated as habitat for fish, other aquatic life and wildlife, and for primary and secondary contact recreation. They shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. The waters should have consistently good aesthetic value.

A warm water fishery is defined in the Massachusetts Surface Water Quality Standards (314 CMR 4.02) as waters in which the maximum mean monthly temperature generally exceeds 20° Celsius during the summer months and are not capable of supporting a year-round population of cold water stenothermal aquatic life. Todd Richards of the Massachusetts Division of Fisheries and Wildlife states that: *From Route 32 in Athol to Millers Falls, this reach should be considered, at minimum, a seasonal cold water fishery habitat from April 1 to June 15 for salmon smolt outmigration. There is also information that stocked salmononids hold over through summer in these reaches.*

The objective of the Federal Clean Water Act (CWA) is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. To meet this goal the CWA requires states to develop information on the quality of their water resources and report this information to the U.S. Environmental Protection Agency (EPA), the U.S. Congress, and the public. To this end the EPA released guidance on November 19, 2001, for the preparation of an integrated "List of Waters" that could combine reporting elements of both §305 (b) and 303(d) of the CWA. The integrated list format allows the states to provide the status of all their assessed waters in one list. States choosing this option must list each water body or segment in one of the following five categories:

1) Unimpaired and not threatened for all designated uses; 2) Unimpaired waters for some uses and not assessed for others; 3) Insufficient information to make assessments for any uses; 4) Impaired or threatened for one or more uses but not requiring the calculation of a Total Maximum Daily Load (TMDL); and 5) impaired or threatened for one or more uses and requiring a TMDL.

The segment of the Millers River where the discharge occurs is classified in the State's 2006 Integrated List of Waters as Category 5, as not in attainment and requiring a TMDL. The listed impairments for this segment are priority organics and metals.

The report titled *Millers River Watershed 2002 Water Quality Assessment Report, Millers River (Segment MA35-05), MA DEP, Division of Watershed Management, Worcester, MA (Draft 4/2003)* provides a summary of current water quality data and information and assesses the status of the state's designated uses for the Millers River and its watershed. This report notes that elevated levels of PCBs and the presence of mercury in fish have caused the MA Department of Public Health to issue a fish consumption advisory. The Erving WWTF #1 discharge is not believed to have contributed to the elevated levels in fish.

Available Dilution

Water quality based limits are established with the use of a calculated available dilution. Title 314 CMR 4.03(3)(a) requires that effluent dilution be calculated based on the receiving water 7Q10. The 7Q10 is the lowest observed mean river flow for 7 consecutive days, occurring over a 10-year recurrence interval. Additionally, the facility design flow is used to calculate available effluent dilution (40 CFR §122.45(b)(i)).

The facility design flow is 1.02 million gallons per day (mgd) or 1.58 cubic feet per second (cfs). The nearest United States Geological Survey (USGS) stream flow gage to the discharge point is located upstream on the Millers River in Erving (Farley), MA (#01166500). Stream gage data was available from 1917-2007.

USGS StreamStats for Massachusetts	Drainage area at POTW	= 388 miles^2
USGS Gage # 01166500	Drainage area at Gage	= 372 miles^2
(388 miles^2/372 miles^2	Drainage area ratio	= 1.04
USGS Gage # 01166500 (1917-2007)	7Q10 at Gage	= 47.5 cfs
(7Q10 at gage)(Drainage area ratio)	(1.04)(47.5 cfs)	= 49.5 cfs
(Plant Q 1.02 mgd)(1.55 converts to cfs)		= 1.58 cfs
(7Q10) + (Plant Q) = Dilution Factor =	(49.5 cfs) + (1.58 cfs)	**= 32 DF**
(Plant Q)	(1.58 cfs)	

USGS - *StreamStats is a Web-based tool that allows users to obtain stream flow statistics, drainage-basin characteristics, and other information for user-selected sites on streams.* Streamstats was used to calculate the drainage area at the POTW.

USGS gage flow data derived from the National Water Information System, Web Interface. http://ma.water.usgs.gov/water/default.htm

EPA's *DFLOW 3.1 (released March 2006) is a Windows-based tool developed to estimate user selected design stream flows for low flow analysis.* DFLOW was used to convert raw gage flow data into the 7Q10.

Flow - The flow limit of 1.02 mgd is based on the annual average design flow of the treatment plant. Federal regulations found at 40 CFR §122.45(b)(i) require that effluent limitations be calculated based on deign flow, which is found in the Permit Application Form 2A, Part A, Section a.6. Flow is to be measured continuously. The permittee shall report the annual average monthly flow using the annual rolling average method (See Permit Footnote 1).

The average monthly and maximum daily flow for each month shall also be reported. Discharge monitoring reports (DMRs) submitted by the Town show that the facility consistently achieves the limit. (See Attachment A of this Fact Sheet)

OUTFALL 001 - CONVENTIONAL POLLUTANTS

Biochemical Oxygen Demand (BOD_5) and Total Suspended Solids (TSS) - Publicly Owned Treatment Works (POTWs) are subject to the secondary treatment requirements set forth at 40 CFR §133. The secondary treatment limitations at 40 CFR §102 (a and b)(1), (2) include average monthly BOD_5 and TSS concentrations of 30 mg/l and average weekly concentrations of 45 mg/l. The provisions of 40 CFR §133.102(a)(3) and (b)(3) require that the 30 day average percent removal for BOD_5 and TSS be not less than 85%. These concentration and percent removal limitations are included in the draft permit and are the same as those in the current permit. The maximum daily concentrations for BOD and TSS shall continue to be reported.

Average monthly and average weekly BOD_5 and TSS mass (lbs per day) limits are based on 40 CFR 122.45(f) and are maintained in this draft permit. The mass limitations for BOD_5 and TSS are based on the 1.02 MGD design flow.

Calculations of maximum allowable loads for average monthly BOD_5 and TSS are based on the following equation:

L = C x DF x 8.34 where:

L = Maximum allowable load in lbs/day.
C = Maximum allowable effluent concentration for reporting period in mg/l. Reporting periods are average monthly and weekly and daily maximum.
DF = Design flow of facility in mgd.
8.34 = Factor to convert effluent concentration in mg/l and design flow in MGD to lbs/day.

(Concentration limit) [45] X 8.34 (Constant) X 1.02 (design flow) = 383 lbs/day

(Concentration limit) [30] X 8.34 (Constant) X 1.02 (design flow) = 255 lbs/day

pH - The draft permit includes pH limitations of 6.0-8.3 standard units which are required by state water quality standards, and are protective of pH standards (6.5 su-8.3 su) with minimum dilution, set forth at Title 314 CMR 4.05(b)(3), for Class B waters. The pH requirements are more stringent than those required under 40 C.F.R. §133.102(c). The pH limits are carried forward from the current permit. The monitoring frequency is once (1) per day.

Escherichia coli Bacteria -The Escherichia coli (*E. coli*) limits for Outfall # 001 are based on state water quality standards for Class B waters (314 CMR 4.05(b)(4)). The State of Massachusetts recently (December 29, 2006) promulgated new bacteria criteria in the Surface Water Quality Standards (314 CMR 4.00). Fecal coliform bacteria have been replaced by *E. coli* in those standards. These new bacteria criteria were approved by EPA on September 19, 2007. Consequently, the draft permit contains *E.coli* limits that will become effective one year after the effective date of the permit. For the first year, there is a *report-only* requirement for *E.coli* as an adjustment period for the facility. The draft permit contains fecal coliform limits as interim limits during that first year, after which they will expire.

The *E.coli* effluent limits for Outfall # 001 are a monthly geometric mean of 126 cfu/100 ml and a daily maximum of 409 cfu/100 (this is the 90% distribution of the geometric mean of 126 cfu/100 ml). These limits are in effect from April 1 to October 31. The draft permit includes a requirement that the *E. coli* samples should be taken at the same time as a daily total chlorine residual sample is collected. One *E. coli* sample per week is required.

Fecal Coliform Bacteria

As discussed above, new bacteria criteria have been adopted by MassDEP. EPA and MassDEP believe that a one year compliance schedule for achieving the new *E. coli* limits is reasonable. Therefore, the existing fecal coliform limits are carried forward in the draft permit for one year, whereupon the new *E. coli* limits will go into effect. These limits are in effect from April 1 to October 31. One sample per week is required.

OUTFALL 001 - NON-CONVENTIONAL POLLUTANTS

Total Residual Chlorine - (TRC) Chlorine and chlorine compounds produced by the chlorination of wastewater, can be extremely toxic to aquatic life. In its water quality standards, MassDEP has adopted the numeric criteria for chlorine that are recommended by EPA in *National Recommended Water Quality Criteria: 2002* published by EPA pursuant to Section 304(a) of the Clean Water Act (see 314 CMR 4.05(5)(e). The numeric aquatic life criteria for total residual chlorine are 11ug/l (chronic) and 19 ug/l (acute). The following are calculations of water quality based chlorine limits:

Acute Chlorine WQC = 19 ug/l

Chronic Chlorine WQC = 11 ug/l

Total Residual Chlorine Limitations:

(acute criteria)(dilution factor) = Acute (Maximum Daily)
19 ug/l x 32 = 608 ug/l /1000 = 0.61* mg/l Maximum Daily.

(chronic criteria)(dilution factor) = Chronic (Average Monthly)
11 ug/l x 32 = 352 ug/l /1000 = 0.35* mg/l Average Monthly

*The calculated limits are close to the existing permit limits, 34 and 59 ug/l, therefore the TRC limits have remained unchanged in the draft permit based on anti-backsliding. The limits continue to be seasonal, April 1 - October 31. The permittee is not authorized to discharge chlorine from November 1 through March 31.

Ultraviolet (UV) Disinfection - The permittee anticipates replacing chlorine disinfection with ultraviolet (UV) disinfection during the effective period of this permit. The permittee is required to notify both EPA and MassDEP prior to the switchover and discontinuance of residual chlorine monitoring.

Whole Effluent Toxicity (WET) - National studies conducted by the EPA have demonstrated that industrial and domestic sources contribute toxic constituents, such as metals, chlorinated solvents, aromatic hydrocarbons, and others to POTWs. The impacts of such complex mixtures are often difficult to assess. Therefore, the toxicity of several constituents in a single effluent can only be accurately examined by whole effluent toxicity (WET) testing. Furthermore, 40 CFR 122.44 (d) requires WET limits in NPDES permits when the permittee has a "reasonable potential" to cause toxicity.

Massachusetts' Water Quality Standards contain a narrative toxicity criterion which states that "All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life, or wildlife." 314 CMR 4.05(5)(e).

EPA's *Technical Support Document for Water Quality-based Toxics Control*, EPA/505/2-90-001, March 1991, recommends using an "integrated strategy" containing both pollutant (chemical) specific approaches and whole effluent (biological) toxicity approaches to control toxic pollutants in effluent discharges entering the nation's waterways. EPA-New England adopted this "integrated strategy" on July 1, 1991, for use in permit development and issuance. These approaches are designed to protect aquatic life and human health. Pollutant-specific approaches such as those in the Gold Book and State regulations address individual chemicals, whereas, the whole effluent toxicity (WET) approach evaluates interactions between pollutants thus rendering an "overall" or "aggregate" toxicity assessment of the effluent. Furthermore, WET measures the "Additive" and/or "Antagonistic" effects of individual chemical pollutants which pollutant specific approaches do not, thus the need for both approaches. In addition, the presence of an unknown toxic pollutant can be discovered and addressed through this process.

Results of these toxicity tests will demonstrate compliance with the no toxic provision of the CWA. If the results of these tests are consistently negative during a two year period, the monitoring frequency and testing may be reduced to not less than one per year. As a special condition of the Draft Permit, the frequency of testing may be reduced by a certified letter from the EPA. This permit provision anticipates that the permittee may wish to request a reduction in WET testing. After a minimum of four complete and consecutive WET tests, all of which must be valid and demonstrate compliance with the permit limits for whole effluent toxicity, the permittee may submit a written request to the EPA seeking a review of the toxicity test results. The EPA will review the test results and other pertinent information to make a determination. The permittee is required to continue testing at the frequency specified in the permit until the permit is either formally modified or until the permittee receives a certified letter from the EPA indicating a change in the permit conditions. This special condition does not negate the permittee's right to request a permit modification at any time prior to the permit expiration.

Pursuant to EPA, Region I and MassDEP policy, discharges having a dilution factor less than 100 (32 for this discharge) require acute toxicity testing and an acute LC_{50} limit of 100%. The draft permit requires the permittee to conduct two acute WET tests per year. Tests are to be conducted using the species, Ceriodaphnia dubia, and are to be conducted in accordance with the EPA Region I Toxicity protocol found in the draft permit Attachment A. The effluent limitation and required test species are the same as in the existing permit. The frequency of testing remains at twice per year. WET tests for the last 3 years have all had LC50 values of 100%.

Nitrogen Monitoring

In December 2000, the Connecticut Department of Environmental Protection (CT DEP) completed a Total Maximum Daily Load (TMDL) for addressing nitrogen-driven eutrophication impacts in Long Island Sound. The TMDL included a Waste Load Allocation (WLA) for point sources and a Load Allocation (LA) for non-point sources. The point source WLA for out-of-basin sources (Massachusetts, New Hampshire and Vermont wastewater facilities discharging to the Connecticut, Housatonic and Thames River watersheds) requires an aggregate 25% reduction from the baseline total nitrogen loading estimated in the TMDL.

The baseline total nitrogen point source loadings estimated for the Connecticut, Housatonic, and Thames River watersheds were 21,672 lbs/day, 3,286 lbs/day, and 1,253 lbs/day respectively (see table below). The estimated current point source total nitrogen loadings for the Connecticut, Housatonic, and Thames Rivers respectively are 13,836 lbs/day, 2,151 lbs/day, and 1,015 lbs/day, based on recent information and including all POTWs in the watershed. The following table summarizes the estimated baseline loadings, TMDL target loadings, and estimated current loadings:

Basin	Baseline Loading[1] lbs/day	TMDL Target[2] lbs/day	Current Loading[3] lbs/day
Connecticut River	21,672	16,254	13,836
Housatonic River	3,286	2,464	2,151
Thames River	1,253	939	1,015
Totals	26,211	19,657	17,002

1. Estimated loading from TMDL, (see Appendix 3 to CT DEP "Report on Nitrogen Loads to Long Island Sound", April 1998)
2. Reduction of 25% from baseline loading
3. Estimated current loading from 2004 – 2005 DMR data – detailed summary attached as Exhibit A.

The TMDL target of a 25 percent aggregate reduction from baseline loadings is currently being met, and the overall loading from MA, NH and VT wastewater treatment plants discharging to the Connecticut River watershed has been reduced by about 36 percent.

In order to ensure that the aggregate nitrogen loading from out-of-basin point sources does not exceed the TMDL target of a 25 percent reduction over baseline loadings, EPA intends to include a permit condition for all existing treatment facilities in Massachusetts and New Hampshire that discharge to the Connecticut, Housatonic and Thames River watersheds, requiring the permittees to evaluate alternative methods of operating their treatment plants to optimize the removal of nitrogen, and to describe previous and ongoing optimization efforts. Facilities not currently engaged in optimization efforts will also be required to implement optimization measures sufficient to ensure that their nitrogen loads do not increase, and that the aggregate 25 % reduction is maintained. Such a requirement has been included in this permit. We also intend to work with the State of Vermont to ensure that similar requirements are included in its discharge permits.

Specifically, the permit requires an evaluation of alternative methods of operating the existing

wastewater treatment facility in order to control total nitrogen levels, including, but not limited to, operational changes designed to enhance nitrification (seasonal and year round), incorporation of anoxic zones, septage receiving policies and procedures, and side stream management.

This evaluation is required to be completed and submitted to EPA and MassDEP by July 1, 2010, along with a description of past and ongoing optimization efforts. The POTW is undergoing a significant upgrade. Nitrogen removal optimization will be addressed in the plant upgrade.

The permit also requires implementation of optimization methods sufficient to ensure that there is no increase in total nitrogen compared to the existing average daily load. The annual average total nitrogen load from this facility (2004 – 2005) is estimated to be 78 lbs/day.

The permit requires annual reports, beginning in year 2010 (after the plant upgrade), to be submitted that summarize progress and activities related to optimizing nitrogen removal efficiencies, document the annual nitrogen discharge load from the facility, and track trends relative to previous years.

The agencies will annually update the estimate of all out-of-basin total nitrogen loads and may incorporate total nitrogen limits in future permit modifications or reissuances as may be necessary to address increases in discharge loads, a revised TMDL, or other new information that may warrant the incorporation of numeric permit limits. There have been significant efforts by the New England Interstate Water Pollution Control Commission (NEIWPCC) work group and others since completion of the 2000 TMDL, which are anticipated to result in revised wasteload allocations for in-basin and out-of-basin facilities. Although not a permit requirement, it is strongly recommended that any facilities planning that might be conducted for this facility should consider alternatives for further enhancing nitrogen reduction.

This permit requires the POTW to be operated to minimize the discharge of total nitrogen to the Millers River which is tributary to the Connecticut River and monitor for nitrogen species monthy in the influent and in the effluent. This is an increase in monitoring from the current permit.

Total Phosphorus Limit

Phosphorus interferes with water uses and reduces in-stream dissolved oxygen. State water quality standards (314 CMR 4.04(5) Control of Eutrophication) require any existing point source discharge containing nutrients in concentrations which encourage eutrophication or growth of weeds or algae shall be provided with the highest and best practicable treatment to remove such nutrients. As discussed above, this segment of the Millers River appears on the Massachusetts 303(d) list for nutrients.

EPA has published national guidance documents which contain recommended total phosphorus criteria and other indicators of eutrophication. EPA's *Quality Criteria for Water 1986* (the Gold Book) recommends, in order to control eutrophication, that in-stream phosphorus concentrations should be less than 100 ug/l (0.100 mg/l) in streams or other flowing waters not discharging

directly to lakes or impoundments.

More recently, EPA released Ecoregional Nutrient Criteria, established as part of an effort to reduce problems associated with excess nutrients in water bodies in specific areas of the country. The published ecoregion-specific criteria represent conditions in waters minimally impacted by human activities, and thus representative of water without cultural eutrophication. The Erving POTW #1 is within Ecoregion XIV, Eastern Coastal Plain, Northeastern Coastal Zone. Recommended criteria for this ecoregion is found in *Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion XIV*, published in December, 2001, and includes a total phosphorus criteria of 23.75 ug/l (0.024 mg/l).

EPA has decided to apply the Gold Book criterion because it was developed from an effects based approach versus the reference conditions-based approach used to develop the ecoregion criteria. The effects-based approach is taken because it is more directly associated with impairment to a designated use (e.g. fishing). The effects-based approach provides a threshold value above which water quality impairments are likely to occur. It applies empirical observations of a causal variable (i.e. phosphorus) and a response variable (i.e. algal growth) associated with designated use impairments. Referenced-base values are statistically derived from a comparison within a population of rivers in the same ecoregional class. They are a quantitative set of river characteristics (physical, chemical, and biological) that represent minimally impacted conditions.

Sampling data from the 2000 Water Quality Assessment Report indicated the highest reported summer in-stream phosphorus concentration was 62 ug/l at Station MI03, downstream/south of Bridge Street, Erving/Wendell. Accounting for this in-stream concentration, a permit limit for phosphorus is calculated as follows:

$\{(Q_R + Q_{WWTP}) * C_{WQ} - (Q_R * C_R)\} / Q_{WWTP} = C_{WWTP}$
where:

QR = 7Q10 flow of the Millers River = 49.5 cfs
QWWTP = Design Flow of Erving # 1 WWTP = 1.58 cfs
CWQ = In-stream water quality criteria = 100 ug/l
CR = In-stream phosphorus concentration = 62 ug/l
CWWTP = Phosphorus concentration limit for Erving # 1 WWTP

{((49.5 cfs + 1.58 cfs) * 100 ug/l) – (49.5 cfs * 62) ug/l} / 1.58 cfs = 1291 ug/l ≈ 1.3 mg/l

The draft permit retains the average monthly phosphorus limit at 1.0 mg/l for the period of May through October, the algal growing season. If additional data or the completion of a Total Maximum Daily Loading (TMDL) indicates the need for more stringent limits, EPA and DEP may exercise the reopener clause of Part II A. 4 of this permit and modify the phosphorus numerical limits. The existing average monthly and maximum daily reporting requirements are also maintained.

VI. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

The permit standard conditions for "Proper Operation and Maintenance" are found at 40 CFR 122.41(e). These require proper operation and maintenance of permitted wastewater systems and related facilities to achieve permit conditions. Similarly, the permittee has a "duty to mitigate" as stated in 40 CFR §122.41(d). This requires the permittee to take all reasonable steps to minimize or prevent any discharge in violation of the permit which has the reasonable likelihood of adversely affecting human health or the environment. EPA and MassDEP maintain that these programs are an integral component of ensuring permit compliance under both of these provisions.

The draft permit includes requirements for the permittee to control infiltration and inflow (I/I). Infiltration is groundwater that enters the collection system through physical defects such as cracked pipes, or deteriorated joints. Inflow is extraneous flow entering the collection system through point sources such as roof leaders, yard and area drains, sump pumps, manhole covers, tide gates, and cross connections from storm water systems.

Significant I/I in a collection system may displace sanitary flow reducing the capacity and the efficiency of the treatment works and may cause bypasses to secondary treatment. It greatly increases the potential for sanitary sewer overflows (SSO) in separate systems.

I/I in the collection system is significant in the spring, causing plant flows to almost double. The Town has an ongoing I/I removal program.

The permittee shall maintain an I/I removal program for its separate sewers commensurate with the severity of the I/I in the collection system. Where portions of the collection system have little I/I, the control program will logically be scaled down.

This requires the permittee to take all reasonable steps to minimize or prevent any discharge in violation of the permit which has a reasonable likelihood of adversely affecting human health or the environment. EPA and MassDEP maintain that an I/I removal program is an integral component to insuring permit compliance under both of these provisions.

The MassDEP has stated that inclusion of the I/I conditions in the draft permit shall be a standard State Certification requirement under Section 401 of the Clean Water Act and 40 CFR §124.55(b).

VII. SLUDGE INFORMATION AND REQUIREMENTS

The POTW produces approximately 40.8 dry metric tons of sludge each year. Section 405(d) of the Clean Water Act requires that sludge conditions be included in all POTW permits. Sludge from the Erving No. 1 POTW is currently trucked off-site to the City of Fitchburg WWTP for treatment (Permit No. MA0100986). If the ultimate sludge disposal method changes, the permittee must notify EPA and MassDEP and the requirements pertaining to sludge monitoring and other conditions would change accordingly (See Attached Sludge Guidance document).

VIII. ESSENTIAL FISH HABITAT

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. §1801 et seq. (1998)), EPA is required to consult with the National Fisheries Services (NOAA Fisheries) if EPA's action or proposed action that it funds, permits, or undertakes, may adversely impact any essential fish habitat (EFH). The Amendments broadly define essential fish habitat as: waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 U.S.C. § 1802 (10)). Adversely impact means any impact which reduces the quality and/or quantity of EFH (50 C.F.R. § 600.910 (a)). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

Essential fish habitat is only designated for species for which federal fisheries management plans exist (16 U.S.C. § 1855 (b) (1)(A)). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999.

Anadromous Atlantic salmon (*Salmo salar*) is the only managed species believed to be present during one or more life stages within the area which encompasses the discharge site. No "habitat areas of particular concern", as defined under §600.815(a)(9) of the Magnuson-Stevens Act, have been designated for this site.

It is EPA's opinion that the operation of this facility, as governed by this permit action, is not likely to adversely affect the species of concern or its habitat for the following reasons:

The effluent discharge is small in relation to the flow of the Millers River. The critical (7Q10) low flow dilution factor is 32 at the permitted plant design flow of 1.02 million gallons per day (mgd). For the last three years, the actual annual average flow from the POTW has not exceeded 0.2 mgd. The critical dilution factor at 0.2 mgd is 161.

All permitted limits in the draft permit are as or more stringent than those in the current permit.

The discharge is to a riffled segment of the river where dissolved oxygen (DO) concentrations are naturally high and where the small amount of biochemical oxygen demand (BOD5) in the effluent will cause minimal depression in the DO.

Total suspended solids (TSS) are in low concentrations and are not likely to concentrate or settle in the swift moving water.

The draft permit includes pH limitations of 6.0-8.3 standard units which are required by state water quality standards, and are protective of pH standards (6.5 su-8.3 su) with minimum dilution. The pH limits are carried forward from the current permit.

The draft permit includes both Escherichia coli (*E. coli*) and fecal coliform bacteria limits. Based on recently modified water quality standards, *E. coli* will replace fecal coliform bacteria.

The permittee anticipates replacing chlorine disinfection with non-toxic ultraviolet disinfection beginning in the summer of 2008. The current water quality based total residual chlorine limits are protective of state water quality criteria for total chlorine.

The permittee shall continue to conduct two whole effluent toxicity (WET) tests per year. WET tests for the last 3 years have all been in compliance with the LC_{50} limit of 100%.

Total phosphorus limits are carried forward from the current permit. This segment of the Millers River shows little sign of eutrophication. The total phosphorus limits protect the down stream Connecticut River.

The permit contains requirements to comply with all state water quality standards for the protection of fish and fish habitat.

EPA believes that the draft permit limits adequately protect Atlantic salmon EFH, and therefore additional mitigation is not warranted. If adverse impacts to EFH are detected as a result of this permit action, or if new information is received that changes the basis for our conclusion, NOAA Fisheries will be notified and an EFH consultation will be reinitiated.

IX.. ENDANGERED SPECIES ACT (ESA)

Section 7(a) of the Endangered Species Act of 1973, as amended (ESA) grants authority to and imposes requirements upon Federal agencies regarding endangered or threatened species of fish, wildlife, or plants ("listed species") and habitat of such species that has been designated as critical (a "critical habitat").

The ESA requires every Federal agency, in consultation with and with the assistance of the Secretary of Interior, to insure that any action it authorizes, funds, or carries out, in the United States or upon the high seas, is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. The United States Fish and Wildlife Service (USFWS) administers Section 7 consultations for freshwater species, where as the NOAA Fisheries administers Section 7 consultations for marine species and anadromous fish.

As the federal agency charged with authorizing the discharges from this facility, EPA has reviewed available habitat information developed by the Services to see if one or more of the federal endangered or threatened species of fish, wildlife, or plants may be present within the influence of the discharge. Federally listed endangered species that may be in the vicinity NOAA Fisheries of the discharges are the shortnose sturgeon (Acipenser brevirostrum). Currently, has authority over the shortnose sturgeon under Section 4(a)(2) of the ESA, 16 U.S.C. Section 1533 (a)(2).

> *Millers River discharges to the CT above the Turners Falls Dam. While there is fish passage at Turners Falls (shad, herring, salmon etc.) there is no passage for shortnose sturgeon and we think the Falls mark the natural upstream limit of shortnose in the system...so there are no shortnose above Turners Falls and no potential for shortnose in The Millers River.* [Julie Crocker-NOAA in 04/22/2008 e-mail to John Nagle-EPA]

EPA concludes that the limits and conditions contained in this draft permit insure that its reissuance is not likely to adversely affect the species of concern for the following reasons:

- the discharges are small in relation to the large flow in the Millers River;
- the permit contains requirements to comply with all state water quality standards for the protection of fish and fish habitat;
- the shallow, fast moving, riffled section of the Millers River at and below the discharge is not favored habitat for the sturgeon;
- the permittee is replacing chlorine with non-toxic ultraviolet disinfection;
- see previous section concerning essential fish habitat.

EPA believes the authorized discharge from this facility is not likely to adversely affect any federally-listed species or their habitats. This preliminary determination is based on the location of the outfall, and the reasons provided above. EPA is seeking concurrence with this opinion from NOAA Fisheries and USFWS through the ESA consultation process.

X. UNAUTHORIZED DISCHARGES

The permittee is authorized to discharge only in accordance with the terms and conditions of this permit and only from the outfall(s) listed in Part I A.1.of this permit. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSOs), are not authorized by the permit and shall be reported in accordance with Section D.1.e.(1) of the General Requirements of the permit (Twenty-four hour reporting).

Notification of SSOs to MassDEP shall be made on its SSO Reporting Form (which includes DEP Regional Office telephone numbers). The reporting form and instruction for its completion may be found on-line at http://www.mass.gov/dep/water/approvals/surffms.htm#sso.

X. MONITORING AND REPORTING

The permittee is required to monitor and report sampling results to EPA and the MassDEP within the time specified in the permit. The effluent monitoring requirements have been established to yield data representative of the discharge by the authority under Section 308(a) of the CWA in accordance with 40 CFR, 122.44, and 122.48.

XI. STATE PERMIT CONDITIONS

The NPDES Permit is issued jointly by the U. S. Environmental Protection Agency and the Massachusetts Department of Environmental Protection under federal and state law, respectively. As such, all the terms and conditions of the permit are, therefore, incorporated into and constitute a discharge permit issued by the MassDEP Commissioner.

XII. GENERAL CONDITIONS

The general conditions of the permit are based primarily on the NPDES regulations 40 CFR 122 through 125 and consist primarily of management requirements common to all permits.

XIII. STATE CERTIFICATION REQUIREMENTS

EPA may not issue a permit unless the Massachusetts Department of Environmental Protection with jurisdiction over the receiving waters certifies that the effluent limitations contained in the permit are stringent enough to assure that the discharge will not cause the receiving water to violate State Water Quality Standards. The staff of the Massachusetts Department of Environmental Protection has reviewed the draft permit. EPA has requested permit certification by the state pursuant to 40 CFR 124.53 and expects that the draft permit will be certified.

XIV. COMMENT PERIOD, HEARING REQUESTS, and PROCEEDURES FOR FINAL DECISIONS

All persons, including applicants, who believe any condition of the Draft Permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to Doug Corb, U.S. EPA, Office of Ecosystem Protection, Municipal Permits Branch, 1 Congress Street, Suite 1100, Boston, Massachusetts 02114-2023. Any person, prior to such date, may submit a request in writing for a public hearing to consider the Draft Permit to EPA and the State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing.

A public hearing may be held if the criteria stated in 40 C.F.R. § 124.12 are satisfied. In reaching a final decision on the Draft Permit, the EPA will respond to all significant comments and make these responses available to the public at EPA's Boston office.

Following the close of the comment period, and after any public hearings, if such hearings are held, the EPA will issue a Final Permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice. Within 30 days following the notice of the Final Permit decision, any interested person may submit a petition for review of the permit to EPA’s Environmental Appeals Board consistent with 40 C.F.R. § 124.19.

XV. EPA CONTACT

Additional information concerning the draft permit may be obtained between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays from:

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U.S. Environmental Protection Agency
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Paul Hogan
MA Department of Environmental Protection
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paul.hogan@state.ma.us

Date: July 24, 2008

Stephen S. Perkins, Director*
Office of Ecosystem Protection
U.S. Environmental Protection Agency

*Please address all comments to Doug Corb and Paul Hogan at the addresses above

FIGURE 2

ERVING POTW #1 (Millers Falls)
TREATMENT PROCESS FLOW DIAGRAM

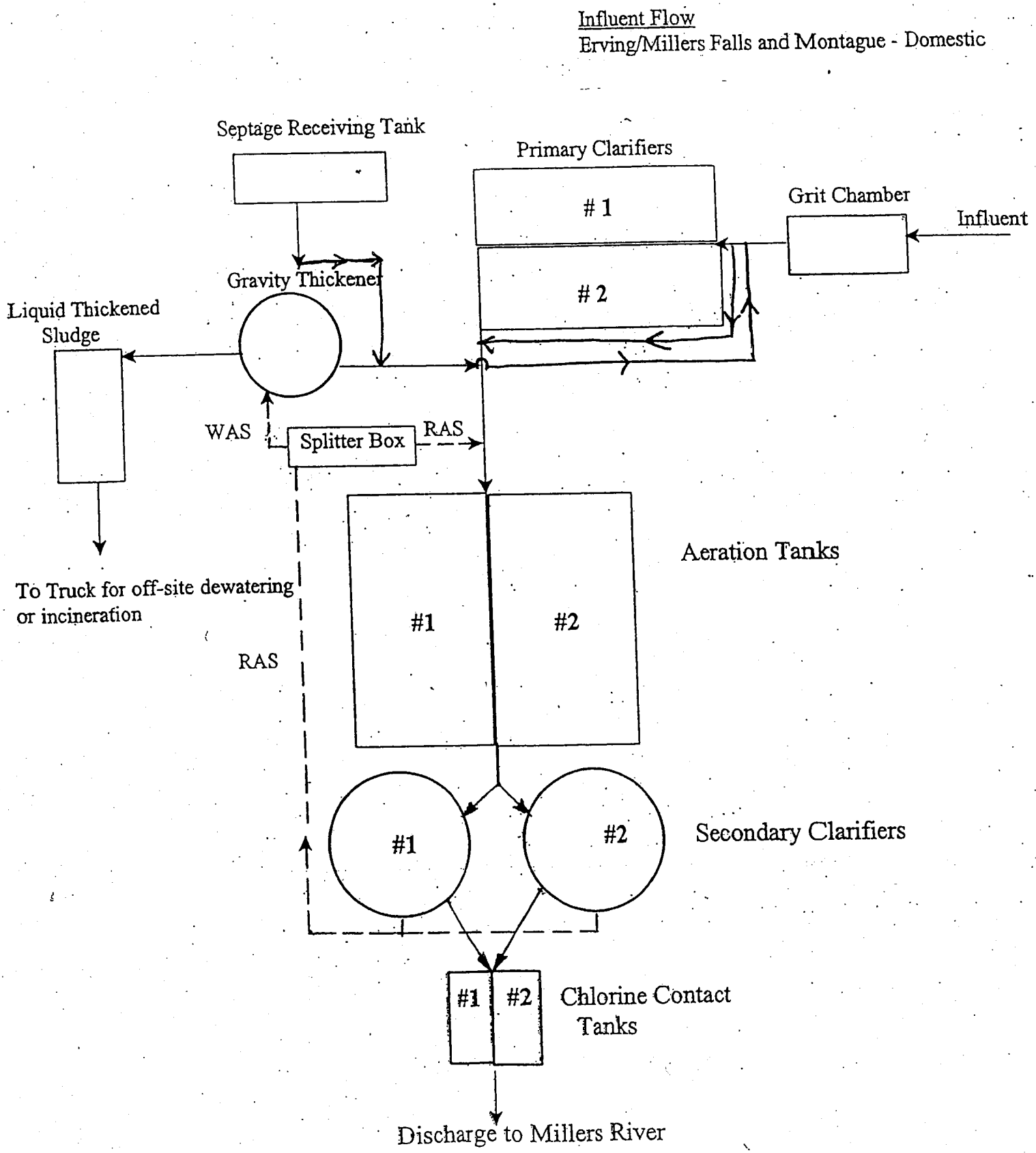

Exhibit A
Nitrogen Loads

NH, VT, MA Discharges to Connecticut River Watershed

FACILITY NAME	PERMIT NUMBER	DESIGN FLOW (MGD)[1]	AVERAGE FLOW (MGD)[2]	TOTAL NITROGEN (mg/l)[3]	TOTAL NITROGEN - Existing Flow(lbs/day)[4]
NEW HAMPSHIRE					
Bethlehem Village District	NH0100501	0.340	0.220	19.600	35.962
Charlestown WWTF	NH0100765	1.100	0.360	19.600	58.847
Claremont WWTF	NH0101257	3.890	1.610	14.060	188.789
Colebrook WWTF	NH0100315	0.450	0.230	19.600	37.597
Groveton WWTF	NH0100226	0.370	0.290	19.600	47.405
Hanover WWTF	NH0100099	2.300	1.440	30.000	360.288
Hinsdale WWTF	NH0100382	0.300	0.300	19.600	49.039
Keene WWTF	NH0100790	6.000	3.910	12.700	414.139
Lancaster POTW	NH0100145	1.200	1.080	8.860	79.804
Lebanon WWTF	NH0100366	3.180	1.980	19.060	314.742
Lisbon WWTF	NH0100421	0.320	0.146	19.600	23.866
Littleton WWTF	NH0100153	1.500	0.880	10.060	73.832
Newport WWTF	NH0100200	1.300	0.700	19.600	114.425
Northumberland Village WPCF	NH0101206	0.060	0.060	19.600	9.808
Sunapee WPCF	NH0100544	0.640	0.380	15.500	49.123
Swanzey WWTP	NH0101150	0.167	0.090	19.600	14.712
Troy WWTF	NH0101052	0.265	0.060	19.600	9.808
Wasau Paper (industrial facility)	NH0001562		5.300	4.400	194.489
Whitefield WWTF	NH0100510	0.185	0.140	19.600	22.885
Winchester WWTP	NH0100404	0.280	0.240	19.600	39.231
Woodsville Fire District	NH0100978	0.330	0.230	16.060	30.806
New Hampshire Total		**24.177**	**19.646**		**2169.596**
VERMONT					
Bellows Falls	VT0100013	1.405	0.610	21.060	107.141
Bethel	VT0100048	0.125	0.120	19.600	19.616
Bradford	VT0100803	0.145	0.140	19.600	22.885
Brattleboro	VT0100064	3.005	1.640	20.060	274.373
Bridgewater	VT0100846	0.045	0.040	19.600	6.539
Canaan	VT0100625	0.185	0.180	19.600	29.424
Cavendish	VT0100862	0.155	0.150	19.600	24.520
Chelsea	VT0100943	0.065	0.060	19.600	9.808
Chester	VT0100081	0.185	0.180	19.600	29.424
Danville	VT0100633	0.065	0.060	19.600	9.808
Lunenberg	VT0101061	0.085	0.080	19.600	13.077
Hartford	VT0100978	0.305	0.300	19.600	49.039
Ludlow	VT0100145	0.705	0.360	15.500	46.537
Lyndon	VT0100595	0.755	0.750	19.600	122.598
Putney	VT0100277	0.085	0.080	19.600	13.077
Randolph	VT0100285	0.405	0.400	19.600	65.386
Readsboro	VT0100731	0.755	0.750	19.600	122.598
Royalton	VT0100854	0.075	0.070	19.600	11.442

St. Johnsbury	VT0100579	1.600	1.140	12.060	114.662

NH, VT, MA Discharges to Connecticut River Watershed

FACILITY NAME	PERMIT NUMBER	DESIGN FLOW (MGD)[1]	AVERAGE FLOW (MGD)[2]	TOTAL NITROGEN (mg/l)[3]	TOTAL NITROGEN - Existing Flow(lbs/day)[4]
Saxtons River	VT0100609	0.105	0.100	19.600	16.346
Sherburne Fire Dist.	VT0101141	0.305	0.300	19.600	49.039
Woodstock WWTP	VT0100749	0.055	0.050	19.600	8.173
Springfield	VT0100374	2.200	1.250	12.060	125.726
Hartford	VT0101010	1.225	0.970	30.060	243.179
Whitingham	VT0101109	0.015	0.010	19.600	1.635
Whitingham Jacksonville	VT0101044	0.055	0.050	19.600	8.173
Cold Brook Fire Dist.	VT0101214	0.055	0.050	19.600	8.173
Wilmington	VT0100706	0.145	0.140	19.600	22.885
Windsor	VT0100919	1.135	0.450	19.600	73.559
Windsor-Weston	VT0100447	0.025	0.020	19.600	3.269
Woodstock WTP	VT0100757	0.455	0.450	19.600	73.559
Woodstock-Taftsville	VT0100765	0.015	0.010	19.600	1.635
Vermont Totals		**15.940**	**10.960**		**1727.302**
MASSACHUSETTS					
Amherst	MA0100218	7.100	4.280	14.100	503.302
Athol	MA0100005	1.750	1.390	17.200	199.393
Barre	MA0103152	0.300	0.290	26.400	63.851
Belchertown	MA0102148	1.000	0.410	12.700	43.426
Charlemont	MA0103101	0.050	0.030	19.600	4.904
Chicopee	MA0101508	15.500	10.000	19.400	1617.960
Easthampton	MA0101478	3.800	3.020	19.600	493.661
Erving #1	MA0101516	1.020	0.320	29.300	78.196
Erving #2	MA0101052	2.700	1.800	3.200	48.038
Erving #3	MA0102776	0.010	0.010	19.600	1.635
Gardner	MA0100994	5.000	3.700	14.600	450.527
Greenfield	MA0101214	3.200	3.770	13.600	427.608
Hadley	MA0100099	0.540	0.320	25.900	69.122
Hardwick G	MA0100102	0.230	0.140	14.600	17.047
Hardwick W	MA0102431	0.040	0.010	12.300	1.026
Hatfield	MA0101290	0.500	0.220	15.600	28.623
Holyoke	MA0101630	17.500	9.700	8.600	695.723
Huntington	MA0101265	0.200	0.120	19.600	19.616
Monroe	MA0100188	0.020	0.010	19.600	1.635
Montague	MA0100137	1.830	1.600	12.900	172.138
N Brookfield	MA0101061	0.760	0.620	23.100	119.445
Northampton	MA0101818	8.600	4.400	22.100	810.982
Northfield	MA0100200	0.280	0.240	16.800	33.627
Northfield School	MA0032573	0.450	0.100	19.600	16.346
Old Deerfield	MA0101940	0.250	0.180	9.200	13.811
Orange	MA0101257	1.100	1.200	8.600	86.069
Palmer	MA0101168	5.600	2.400	18.800	376.301
Royalston	MA0100161	0.040	0.070	19.600	11.442
Russell	MA0100960	0.240	0.160	19.600	26.154
Shelburne Falls	MA0101044	0.250	0.220	16.900	31.008
South Deerfield	MA0101648	0.850	0.700	7.900	46.120
South Hadley	MA0100455	4.200	3.300	28.800	792.634
Spencer	MA0100919	1.080	0.560	13.600	63.517
Springfield	MA0103331	67.000	45.400	4.300	1628.135

Sunderland	MA0101079	0.500	0.190	8.700	13.786
Templeton	MA0100340	2.800	0.400	26.400	88.070

NH, VT, MA Discharges to Connecticut River Watershed

FACILITY NAME	PERMIT NUMBER	DESIGN FLOW (MGD)[1]	AVERAGE FLOW (MGD)[2]	TOTAL NITROGEN (mg/l)[3]	TOTAL NITROGEN - Existing Flow(lbs/day)[4]
Ware	MA0100889	1.000	0.740	9.400	58.013
Warren	MA0101567	1.500	0.530	14.100	62.325
Westfield	MA0101800	6.100	3.780	20.400	643.114
Winchendon	MA0100862	1.100	0.610	15.500	78.855
Woronoco Village	MA0103233	0.020	0.010	19.600	1.635
Massachusetts Totals		**166.010**	**106.950**		**9938.820**

1. Design flow – typically included as a permit limit in MA and VT but not in NH.
2. Average discharge flow for 2004 – 2005. If no data in PCS, average flow was assumed to equal design flow.
3. Total nitrogen value based on effluent monitoring data. If no effluent monitoring data, total nitrogen value assumed to equal average of MA secondary treatment facilities (19.6 mg/l), average of MA seasonal nitrification facilities (15.5 mg/l), or average of MA year round nitrification facilities (12.7 mg/l). Average total nitrogen values based on a review of 27 MA facilities with effluent monitoring data. Facility is assumed to be a secondary treatment facility unless ammonia data is available and indicates some level of nitrification.
4. Current total nitrogen load.

Total Nitrogen Load = 13,836 lbs/day
MA (41 facilities) = 9,939 lbs/day (72%)
VT (32 facilities) = 1,727 lbs/day (12%)
NH (21 facilities) = 2170 lbs/day (16%)
TMDL Baseline Load = 21,672 lbs/day

TMDL Allocation = 16,254 lbs/day (25% reduction)

MA Discharges to Housatonic River Watershed

FACILITY NAME	PERMIT NUMBER	DESIGN FLOW (MGD)[1]	AVERAGE FLOW (MGD)[2]	TOTAL NITROGEN (mg/l)[3]	TOTAL NITROGEN - Existing Flow(lbs/day)[4]
MASSACHUSETTS					
Crane	MA0000671		3.100	8.200	212.003
Great Barrington	MA0101524	3.200	2.600	17.000	368.628
Lee	MA0100153	1.000	0.870	14.500	105.209
Lenox	MA0100935	1.190	0.790	11.800	77.745
Mead Laurel Mill	MA0001716		1.500	6.400	80.064
Mead Willow Mill	MA0001848		1.100	4.600	42.200
Pittsfield	MA0101681	17.000	12.000	12.400	1240.992
Stockbridge	MA0101087	0.300	0.240	11.100	22.218
West Stockbridge	MA0103110	0.076	0.018	15.500	2.327
Massachusetts Totals			**22.218**		**2151.386**

1. Design flow – typically included as a permit limit in MA and VT but not in NH.
2. Average discharge flow for 2004 – 2005. If no data in PCS, average flow was assumed to equal design flow.
3. Total nitrogen value based on effluent monitoring data. If no effluent monitoring data, total nitrogen value assumed to equal average of MA secondary treatment facilities (19.6 mg/l), average of MA seasonal nitrification facilities (15.5 mg/l), or average of MA year round nitrification facilities (12.7 mg/l). Average total nitrogen values based on a review of 27 MA facilities with effluent monitoring data. Facility is assumed to be a secondary treatment facility unless ammonia data is available and indicates some level of nitrification.
4. Current total nitrogen load.

Total Nitrogen Load = 2151.386 lbs/day

TMDL Baseline Load = 3,286 lbs/day
TMDL Allocation = 2,464 lbs/day (25% reduction)

MA Discharges to Thames River Watershed

FACILITY NAME	PERMIT NUMBER	DESIGN FLOW (MGD)[1]	AVERAGE FLOW (MGD)[2]	TOTAL NITROGEN (mg/l)[3]	TOTAL NITROGEN - Existing Flow(lbs/day)[4]
MASSACHUSETTS					
Charlton	MA0101141	0.450	0.200	12.700	21.184
Leicester	MA0101796	0.350	0.290	15.500	37.488
Oxford	MA0100170	0.500	0.230	15.500	29.732
Southbridge	MA0100901	3.770	2.900	15.500	374.883
Sturbridge	MA0100421	0.750	0.600	10.400	52.042
Webster	MA0100439	6.000	3.440	17.400	499.199
Massachusetts Totals		**11.820**	**7.660**		**1014.528**

1. Design flow – typically included as a permit limit in MA and VT but not in NH.
2. Average discharge flow for 2004 – 2005. If no data in PCS, average flow was assumed to equal design flow.
3. Total nitrogen value based on effluent monitoring data. If no effluent monitoring data, total nitrogen value assumed to equal average of MA secondary treatment facilities (19.6 mg/l), average of MA seasonal nitrification facilities (15.5 mg/l), or average of MA year round nitrification facilities (12.7 mg/l). Average total nitrogen values based on a review of 27 MA facilities with effluent monitoring data. Facility is assumed to be a secondary treatment facility unless ammonia data is available and indicates some level of nitrification.
4. Current total nitrogen load.

Total Nitrogen Load = 1014.528 lbs/day

TMDL Baseline Load = 1,253 lbs/day

TMDL Allocation = 939 lbs/day (25% reduction)

MA0101516 ERVING P O T W #1

BOD5

MP Date	Rec Date	255 lb/d NOD MO AVG	383 lb/d WKLY AVG	30 mg/L MO AVG	45 mg/L WKLY AVG	Req. Mon. mg/L DAILY MX
2/28/2006	3/15/2006	33	53	15	20	20
3/31/2006	4/17/2006	18	28	12	19	19
4/30/2006	5/17/2006	11	16	9.7	13	13
5/31/2006	11/28/2006	2	3.5	15	25	25
6/30/2006	11/28/2006	11	15	7.9	10	10
7/31/2006	8/15/2006	10	13	9.9	13	13
8/31/2006	9/18/2006	16	27	16	32	32
9/30/2006	10/19/2006	12	15	7.8	9.3	9.3
10/31/2006	11/16/2006	17	21	11	13	13
11/30/2006	12/18/2006	8	12	7.9	9.5	9.5
12/31/2006	1/10/2007	7	8	7.3	9	9
1/31/2007	2/9/2007	5	7	5	7	7
2/28/2007	3/19/2007	9	17	9.5	16	16
3/31/2007	4/18/2007	12	14	11	17	17
4/30/2007	5/15/2007	13	22	7.5	11	11
5/31/2007	6/18/2007	11	19	7	14	14
6/30/2007	7/13/2007	16	34	15	34	34
7/31/2007	8/16/2007	12	16	13	17	17
8/31/2007	9/17/2007	7	10	8.5	11	11
9/30/2007	10/16/2007	9	10	12	14	14
10/31/2007	11/19/2007	9	17	13	23	23
11/30/2007	2/6/2008	13	19	16.8	26	26
12/31/2007	1/15/2008	13	20	16.5	21	21
1/31/2008	2/14/2008	13	21	12.6	21	21

Chlorine, total residual

MP Date	Rec Date	.34 mg/L NOD MO AVG	.59 mg/L DAILY MX
4/30/2006	5/17/2006	0.19	0.62
5/31/2006	11/28/2006	0.14	0.55
6/30/2006	11/28/2006	0.23	0.55
7/31/2006	8/15/2006	0.32	0.74
8/31/2006	9/18/2006	0.29	0.87
9/30/2006	10/19/2006	0.16	0.51
10/31/2006	11/16/2006	0.22	0.57
4/30/2007	5/15/2007	0.12	0.43
5/31/2007	6/18/2007	0.22	0.5
6/30/2007	7/13/2007	0.27	0.5
7/31/2007	8/16/2007	0.16	0.44
8/31/2007	9/17/2007	0.21	0.49
9/30/2007	10/16/2007	0.3	0.48
10/31/2007	11/19/2007	0.2	0.48

Fecal Coliform

% Exceed	MP Date	200 #/100mL MO GEO	400 #/100mL DAILY MX
5	4/30/2006	10	10
	5/31/2006	91	91
	6/30/2006	10	10
25	7/31/2006	10	
47	8/31/2006	10	10
	9/30/2006	10	10
	10/31/2006	10	10
	4/30/2007	110	110
	5/31/2007	3	10
	6/30/2007	14	53
	7/31/2007	34	53
	8/31/2007	26	39
	9/30/2007	7	200
	10/31/2007	32	247

Flow, in conduit or thru treatment plant

1.02 Mgal/d

MP Date	Rec Date	NOD 12MO AVG
2/28/2006	3/15/2006	0.522
3/31/2006	4/17/2006	0.523
4/30/2006	5/17/2006	0.136
5/31/2006	11/28/2006	0.162
6/30/2006	11/28/2006	0.481
7/31/2006	8/15/2006	0.122
8/31/2006	9/18/2006	0.146
9/30/2006	10/19/2006	0.194
10/31/2006	11/16/2006	0.481
11/30/2006	12/18/2006	0.463
12/31/2006	1/10/2007	0.438
1/31/2007	2/9/2007	0.707
2/28/2007	3/19/2007	0.374
3/31/2007	4/18/2007	0.367
4/30/2007	5/15/2007	0.382
5/31/2007	6/18/2007	0.391
6/30/2007	7/13/2007	0.385
7/31/2007	8/16/2007	0.381
8/31/2007	9/17/2007	0.37
9/30/2007	10/16/2007	0.349
10/31/2007	11/19/2007	0.328
11/30/2007	2/6/2008	0.387
12/31/2007	1/15/2008	0.36
1/31/2008	2/14/2008	125972

pH

6 SU

8.3 SU

MP Date	Rec Date	MINIMUM	MAXIMUM
2/28/2006	3/15/2006	6.5	6.9
3/31/2006	4/17/2006	6.4	7.2
4/30/2006	5/17/2006	6.1	7.1
5/31/2006	11/28/2006	6.1	7.3
6/30/2006	11/28/2006	6.2	7.5
7/31/2006	8/15/2006	6.3	7.3
8/31/2006	9/18/2006	6.3	7.1
9/30/2006	10/19/2006	6.6	7.6
10/31/2006	11/16/2006	6.6	7.3
11/30/2006	12/18/2006	6.2	7.1
12/31/2006	1/10/2007	6.2	7.1
1/31/2007	2/9/2007	6.2	7
2/28/2007	3/19/2007	6.6	7
3/31/2007	4/18/2007	6.1	7.1
4/30/2007	5/15/2007	6.4	7.3
5/31/2007	6/18/2007	6.2	7
6/30/2007	7/13/2007	6.5	7.2
7/31/2007	8/16/2007	6.7	7.4
8/31/2007	9/17/2007	6.9	7.4
9/30/2007	10/16/2007	6.5	7.3
10/31/2007	11/19/2007	6.6	7.9
11/30/2007	2/6/2008	6.4	7.1
12/31/2007	1/15/2008	6	7
1/31/2008	2/14/2008	6.4	6.9

00665 - Phosphorus, total (as P) (1 mg/L

MP Date	Rec Date	NOD MO AVG	Req. Mon. mg/L DAILY MX
5/31/2006	11/28/2006	0.87	1
6/30/2006	11/28/2006	0.71	1
7/31/2006	8/15/2006	0.48	0.86
8/31/2006	9/18/2006	0.28	0.48
9/30/2006	10/19/2006	0.69	0.92
10/31/2006	11/16/2006	0.73	1
5/31/2007	6/18/2007	0.61	1
6/30/2007	7/13/2007	0.68	0.92
7/31/2007	8/16/2007	0.8	0.97
8/31/2007	9/17/2007	0.56	0.94
9/30/2007	10/16/2007	0.45	0.63
10/31/2007	11/19/2007	0.42	0.62

00530 - Solids, total suspended (S 255 lb/d

MP Date	Rec Date	NOD MO AVG	383 lb/d WKLY AVG	MO AVG	WK AVG	LY MX
2/28/2006	3/15/2006	21	28	9	12	12
3/31/2006	4/17/2006	17	19	12	16	16
4/30/2006	5/17/2006	13	16	12	14	14
5/31/2006	11/28/2006	15	23	11	16	16
6/30/2006	11/28/2006	8	14	6.1	9.4	9.4
7/31/2006	8/15/2006	9	12	10	14	14
8/31/2006	9/18/2006	14	20	13	18	18
9/30/2006	10/19/2006	16	22	11	15	15
10/31/2006	11/16/2006	16	24	10	15	15
11/30/2006	12/18/2006	7	11	6.8	11	11
12/31/2006	1/10/2007	9	11	8.3	12	12
1/31/2007	2/9/2007	8	12	7	11	11
2/28/2007	3/19/2007	7	11	8	13	13
3/31/2007	4/18/2007	7	14	7.5	15	15
4/30/2007	5/15/2007	3	6	1.6	3.2	3.2
5/31/2007	6/18/2007	8	12	5	7	7
6/30/2007	7/13/2007	9	17	9	17	17
7/31/2007	8/16/2007	8	10	9	11	11
8/31/2007	9/17/2007	6	8	8	11	11
9/30/2007	10/16/2007	16	45	8	11	11
10/31/2007	11/19/2007	7	8	8.8	11	11
11/30/2007	2/6/2008	18	26	22.2	35.2	35.2
12/31/2007	1/15/2008	13	15	17.3	21	21
1/31/2008	2/14/2008	5	6	5	6	6

BOD, 5-day, 20 deg. C

MP Date	Rec Date	Req. Mon. lb/d NOD MO AVG	Req. Mon. mg/L MO AV MN
2/28/2006	3/15/2006	320	139
3/31/2006	4/17/2006	243	187
4/30/2006	5/17/2006	210	195
5/31/2006	11/28/2006	239	176
6/30/2006	11/28/2006	329	227
7/31/2006	8/15/2006	202	218
8/31/2006	9/18/2006	281	249
9/30/2006	10/19/2006	324	204
10/31/2006	11/16/2006	325	202
11/30/2006	12/18/2006	222	206
12/31/2006	1/10/2007	130	140
1/31/2007	2/9/2007	179	173
2/28/2007	3/19/2007	158	184
3/31/2007	4/18/2007	223	215
4/30/2007	5/15/2007	396	256
5/31/2007	6/18/2007	435	261
6/30/2007	7/13/2007	260	240
7/31/2007	8/16/2007	302	323
8/31/2007	9/17/2007	303	399
9/30/2007	10/16/2007	245	347
10/31/2007	11/19/2007	288	386
11/30/2007	2/6/2008	207	264
12/31/2007	1/15/2008	399	462
1/31/2008	2/14/2008	295	280

00530 - Solids, total suspended (S Req. Mon. lb/d

			Req. Mon. mg/L
MP Date	Rec Date	NOD MO AVG	MO AV MN
2/28/2006	3/15/2006	199	88
3/31/2006	4/17/2006	205	147
4/30/2006	5/17/2006	225	206
5/31/2006	11/28/2006	252	194
6/30/2006	11/28/2006	222	159
7/31/2006	8/15/2006	123	138
8/31/2006	9/18/2006	142	129
9/30/2006	10/19/2006	208	132
10/31/2006	11/16/2006	185	116
11/30/2006	12/18/2006	192	175
12/31/2006	1/10/2007	141	149
1/31/2007	2/9/2007	164	159
2/28/2007	3/19/2007	140	164
3/31/2007	4/18/2007	182	174
4/30/2007	5/15/2007	422	264
5/31/2007	6/18/2007	481	285
6/30/2007	7/13/2007	186	175
7/31/2007	8/16/2007	446	481
8/31/2007	9/17/2007	336	442
9/30/2007	10/16/2007	175	248
10/31/2007	11/19/2007	389	529
11/30/2007	2/6/2008	218	278
12/31/2007	1/15/2008	357	401
1/31/2008	2/14/2008	177	173

BOD, 5-day, percent removal

MP Date	Rec Date	NOD	85 % MO AV	MN
2/28/2006	3/15/2006		89	
3/31/2006	4/17/2006		93	
4/30/2006	5/17/2006		94	
5/31/2006	11/28/2006		93	
6/30/2006	11/28/2006		96	
7/31/2006	8/15/2006		95	
8/31/2006	9/18/2006		93	
9/30/2006	10/19/2006		96	
10/31/2006	11/16/2006		95	
11/30/2006	12/18/2006		95	
12/31/2006	1/10/2007		94	
1/31/2007	2/9/2007		97	
2/28/2007	3/19/2007		95	
3/31/2007	4/18/2007		94	
4/30/2007	5/15/2007		96	
5/31/2007	6/18/2007		97	
6/30/2007	7/13/2007		94	
7/31/2007	8/16/2007		95	
8/31/2007	9/17/2007		97	
9/30/2007	10/16/2007		96	
10/31/2007	11/19/2007		97	
11/30/2007	2/6/2008		86	
12/31/2007	1/15/2008		95	
1/31/2008	2/14/2008		95	

Solids, suspended percent removal

MP Date	Rec Date	NOD	85 % MO AV MN
2/28/2006	3/15/2006		90
3/31/2006	4/17/2006		92
4/30/2006	5/17/2006		94
5/31/2006	11/28/2006		94
6/30/2006	11/28/2006		96
7/31/2006	8/15/2006		91
8/31/2006	9/18/2006		90
9/30/2006	10/19/2006		91
10/31/2006	11/16/2006		92
11/30/2006	12/18/2006		95
12/31/2006	1/10/2007		93
1/31/2007	2/9/2007		93
2/28/2007	3/19/2007		95
3/31/2007	4/18/2007		96
4/30/2007	5/15/2007		99
5/31/2007	6/18/2007		98
6/30/2007	7/13/2007		95
7/31/2007	8/16/2007		97
8/31/2007	9/17/2007		98
9/30/2007	10/16/2007		96
10/31/2007	11/19/2007		96
11/30/2007	2/6/2008		89
12/31/2007	2/6/2008		93
1/31/2008	2/14/2008		97

Nitrogen, ammonia total (as N)

MP Date	Rec Date	NOD	Req. Mon. mg/L DAILY MX
2/28/2006	1/13/2006		4.8
5/31/2006	4/17/2006		11
8/31/2006	11/28/2006		3.8
11/30/2006	11/16/2006		33
2/28/2007	12/18/2006		33
5/31/2007			
8/31/2007			
11/30/2007	10/16/2007		1.9

51087 - Nitrogen, Kjeldahl, total (TKN) (water)

Req. Mon. mg/L

MP Date	Rec Date	NOD DAILY MX
2/28/2006	1/13/2006	5.6
5/31/2006	4/17/2006	9.9
8/31/2006	11/28/2006	5.3
11/30/2006	11/16/2006	21
2/28/2007	12/18/2006	21
5/31/2007		
8/31/2007		
11/30/2007	10/16/2007	1

00620 - Nitrogen, nitrate total (as N) (SNC Group = 1)

Req. Mon. mg/L

MP Date	Rec Date	NOD DAILY MX
2/28/2006	1/13/2006	2.7
5/31/2006	4/17/2006	13
8/31/2006	11/28/2006	30
11/30/2006	11/16/2006	21
2/28/2007	12/18/2006	21
5/31/2007		
8/31/2007		
11/30/2007	10/16/2007	42

Nitrogen, nitrite total (as N)

Req. Mon. mg/L

MP Date	Rec Date	NOD DAILY MX
2/28/2006	1/13/2006	4.5
5/31/2006	4/17/2006	0.032
8/31/2006	11/28/2006	0.71
11/30/2006	11/16/2006	0.21
2/28/2007	12/18/2006	0.21
5/31/2007		
8/31/2007		
11/30/2007	10/16/2007	0.34

LC50 Static 48Hr Acute Ceriodaph 100 %

MP Date	Rec Date	NOD DAILY MN
7/31/2006	8/15/2006	100
10/31/2006		
7/31/2007	8/16/2007	100
10/31/2007		